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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/711,327

09/10/2004

Mark C. Peterman

AL001

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05/27/2010

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EXAMINER

DAM, DUSTIN Q

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

05/27/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ulman@nupat.com

Office Action Summary	Application No. 10/711,327	Applicant(s) PETERMAN ET AL.	
	Examiner DUSTIN Q. DAM	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 & 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

1. This Office Action is in response to the Amendments to the Claims, Remarks, and Dr. Harvey Fishman's declaration under 37 C.F.R. 1.132 filed February 18, 2010.
2. In view of the Amendments to the Claims filed February 18, 2010, the rejections of claims 1-5 and 9 under 35 U.S.C. 103(a) previously presented in the Office Action sent September 3, 2009 have been withdrawn.
3. Claims 1-9 are currently pending while claims 6-8 have been withdrawn from consideration. Claims 1-5 and 9 have been fully considered.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by BOHM et al. (U.S. PG-Pub 2003/0015425 A1).

- a. With regards to claim 1, BOHM et al. discloses a device for creating microgradients in solution comprising a microfluidic channel (any of channels 3a-3h, FIG. 17; & see [0168] for channel dimensions which are interpreted to read on the claimed "micro...channel") with openings at each end (opening of channels 3a-h leading

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to well 6a and well 6b, FIG. 17) and two or more apertures in the channel walls 9apertures 17, FIG. 17), two and only two electrodes (5 and 7, FIG. 17), a first electrode placed in or near a first opening at a first end of the channel (first electrode 5 disposed near the opening of channel 3 at well 6a, FIG. 17), and a second electrode placed in or near a second opening at a second end of the channel (second electrode 7 disposed near the opening of channel 3 at well 6b, FIG. 17), and an electrical power supply connected to the electrodes (12, FIG. 17), wherein, the apertures are in contact with an external fluid bath while the openings are isolated from the bath (“bath” is interpreted to include a contained liquid for a special purpose; external fluid bath in device 18, FIG. 17; see [0097] describing device 18 comprises “second fluid sample” in which the second fluid sample is interpreted to read on the claimed “external bath” because the liquid is external to the channel and is contained for a special purpose; see [0148] describing device 18 dropping droplets of the second fluid sample, or the external bath, into apertures 17 in which droplets of the external bath provide for contact of the apertures with the external bath; the openings of the channels 3 are isolated, or not in contact, with the external bath).

b. With regards to claim 2, BOHM et al. discloses a device wherein the power supply is connected to the electrodes such that the device is structurally capable of generating several distinct current paths exist from one end of the channel to the other and current flows along all of these paths when an electric field is applied along the channel by the combination of the power supply and the electrodes ([0145] discloses power supply 12 and electrodes 5 & 7 produce a voltage in microchannels 3; the

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application of a voltage across the channels inherently provides several distinct current paths which current flows from one end of the channel to the other especially in view of the second fluid droplet located in apertures 17).

c. With regards to claim 3, BOHM et al. discloses a device wherein the power supply is connected to the electrodes such that the device is structurally capable of creating simultaneous flow of fluid through two or more of the apertures and structurally capable of creating a chemical concentration gradient is formed near the apertures ([0145-0146] describing fluid from external bath introduced, or flows through, apertures 17).

d. With regards to claim 4, BOHM et al. discloses a device wherein the length of the channel is between about ten microns and ten millimeters ([0168] “length of 20 mm” which is interpreted to read on the claimed “about ten microns and ten millimeters”), the traverse dimensions of the channel is between about 0.1 and one hundred microns ([0168] “100 micrometer in width”), and the dimensions of the apertures are between about 0.1 and ten microns across ([0084] “between about 0.1 micrometers and about 200 micrometers”).

e. With regards to claim 5, BOHM et al. discloses a device further comprising structures that form indentations in the channel near the apertures (the side walls of the apertures 17, FIG. 17 are interpreted to read on the claimed "structures" which the side walls of apertures 17 are indented relative to the top surface of the channel walls), such indentations being approximately the size of a living cell ([0084] describing indentations or aperture walls may be “between about 0.1 micrometers and about 200 micrometers”).

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f. With regards to claim 9, BOHM et al. discloses a microfluidic device comprising a microfluidic channel (any of channels 3a-3h, FIG. 17; & see [0168] for channel dimensions which are interpreted to read on the claimed "micro...channel") defining a flow path for a fluid having a known concentration of a selected chemical (channels 3a-h, FIG. 17 structurally capable of defining flow path for any chemical), the microchannel comprising a plurality of apertures defined in the channel (apertures 17, FIG. 17) structurally capable of providing communication between the channel and a reservoir containing a sample solution (reservoir 18 containing "second fluid sample"; see [0097]; see FIG. 17 depicting apertures 17 providing opening, which communicates, which channels 3 and reservoir 18 when droplets 19 contact the apertures), and an inlet and an outlet that are isolated from the reservoir (inlet and outlets of channels 3a-h leading into openings 6a and 6b), electric field means (power supply 12 and electrodes 5 and 7) structurally capable of inducing electroosmotic flow along the flow path, wherein the electric field means comprise a number of electrodes that is less than or equal to the number of apertures (such as 2 electrodes 5 and 7 for two apertures per channel, FIG. 17), and means for applying pressure (such as gravitational pressure as wells 6a-b are open to gravitational forces) to the fluid in the flow path such that the device is structurally capable of allowing fluid flowing simultaneously out of the channel at the apertures and structurally capable of forming a concentration gradient at the apertures along the channel such that cells cultured near each aperture are exposed to a separate concentration of the chemical corresponding to the location of the aperture along the concentration gradient.

Response to Arguments

6. Applicant's arguments filed February 18, 2010 have been fully considered but they are not persuasive.

a. In view of the Amendments to the Claims, a new grounds of rejections necessitated by the amendments to the claims renders applicant's arguments moot.

b. However, for prosecution clarity, Dr. Harvey Fishman's declaration is noted and found unpersuasive. The declaration alleges the examiner's previous interpretation of the JESPERSEN reference of record is incorrect to interpret a patch clamp device to comprise a plurality of apertures or "sites". Applicant only offers evidence that patch clamp experiments require N+1 electrodes relative to apertures. Even if the provided statement were taken as true, that patch clamp devices require N+1 electrodes, this assertion has nothing to do with interpreting a patch clamp device to comprise multiple apertures, especially in the face of the JESPERSEN reference, and in the face of the two patents explicitly disclosing patch clamp devices with multiple apertures referenced by Examiner Kaj Olsen during the interview of 12/15/2009.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUSTIN Q. DAM whose telephone number is (571)270-5120. The examiner can normally be reached on Monday through Thursday, 6:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Michener can be reached on (571)272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer K. Michener/
Supervisory Patent Examiner, Art Unit 1795

dd
May 21, 2010

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